Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
Alaska Communications Internet, LLC Petition for Partial Waiver of Section 15.407(a)(3) of the Commission's Rules	ET Docket No. 13-49

18-282

Petition for Partial Waiver of Alaska Communications Internet, LLC

Leonard A. Steinberg
Senior Vice President & General Counsel
ALASKA COMMUNICATIONS SYSTEMS GROUP, INC.
600 Telephone Avenue
Anchorage, Alaska 99503

Richard R. Cameron
CAMERON LAW & POLICY LLC
2550 M Street, N.W., Suite 343
Washington, D.C. 20037
(202) 230-4962
Richard@CameronLawPolicy.com

Karen Brinkmann
KAREN BRINKMANN PLLC
1800 M Street, N.W., Suite 800-N
Washington, D.C. 20036
(202) 365-0325
KB@KarenBrinkmann.com

Counsel for Alaska Communications Internet, LLC

September 6, 2018

Summary

Alaska Communications hereby requests a partial waiver of Section 15.407(a)(3) of the Commission's rules, 47 C.F.R. § 15.407(a)(3), as it applies to the Company's use of certain Unlicensed National Information Infrastructure ("U-NII") devices operating in the U-NII-3 band (5.725-5.85 GHz) within a 40-mile radius of Chena Hot Springs, Alaska and Ninilchik, Alaska. This waiver would permit Alaska Communications to deploy and operate RADWIN base station radios that employ beamforming technology to emit a series of directional beams that form individual directional connections, sequentially or simultaneously, with individual receivers or groups of receivers at effective isotropic radiated power ("EIRP") levels that exceed the Section 15.407(a)(3) limits otherwise applicable to point-to-multipoint U-NII-3 devices.

As the recipient of Connect America Fund ("CAF") Phase II high cost support, Alaska Communications has committed to deploy voice and qualifying broadband Internet access service to over 31,000 high-cost customer locations in Alaska that have not previously been served by any other broadband provider. As a result of uniquely low customer density in the areas of Alaska supported by CAF Phase II, Alaska Communications is deploying fixed wireless broadband infrastructure, including the RADWIN base station radios that are the subject of this waiver request, to meet its CAF Phase II commitment. This waiver would enable Alaska Communications to increase the number of customer locations within range of these base stations, expanding service availability while reducing deployment costs. Thus, this waiver would serve the public interest. The greater EIRP level would allow Alaska Communications to utilize its CAF Phase II support more efficiently and would increase the reliability and potential speed of CAF-supported broadband Internet access services that the CAF-supported infrastructure will enable.

This waiver is consistent with precedent and will not increase the interference risk to any other user of the band. In fact, RADWIN has demonstrated that its modern beamforming point-to-multipoint radios operate by forming a series of sequential or simultaneous point-to-point connections, which present lower risks of interference to other receivers in the band than basic point-to-point radios that the Commission's authorize for use with high-gain antennae.

Thus, Alaska Communications requests that the Commission expeditiously grant this partial waiver, as described herein.

Table of Contents

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Alaska Communications Internet, LLC Petition for Partial Waiver of Section 15.407(a)(3) of the Commission's Rules	ET Docket No. 13-49

Petition for Partial Waiver of Alaska Communications Internet, LLC

Alaska Communications Internet, LLC ("Alaska Communications" or the "Company") hereby requests a partial waiver of Section 15.407(a)(3) of the Commission's rules, 47 C.F.R. § 15.407(a)(3), as it applies to the Company's use of Unlicensed National Information Infrastructure ("U-NII") devices within a 40-mile radius of Chena Hot Springs, Alaska and Ninilchik, Alaska. Specifically, within those areas, Alaska Communications requests a waiver of the third sentence of Section 15.407(a)(3)[1] to permit it to use U-NII devices that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals into individual receivers or groups of receivers in the U-NII-3 (5.725-5.85 GHz) band with antennas providing directional gain exceeding 6 dBi, without reducing the maximum conducted output power or the maximum power spectral density of the U-NII devices themselves below the

---

[1] 47 C.F.R. § 15.407(a)(3) ("For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. *If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.* However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.") (emphasis added to identify the portion of the rule of which waiver is requested).

respective 1-Watt or 30 dBm limits prescribed by Section 15.407(a)(3). The Commission has recognized that the use of U-NII devices as proposed herein would be substantially similar to point-to-point transmissions that are not subject to the antenna gain restrictions that govern omnidirectional or sectorial point-to-multipoint transmissions. Thus, waiver of the rule would not undermine the purpose of the rule in any way.

Specifically, in 2017, the Commission granted a waiver of the EIRP limits in Section 15.407(a)(3) to permit Amtrak to operate trackside base stations in the U-NII-1 and U-NII-3 bands with high-gain antennas to form connections with passing trains in the Boston-Washington, D.C. corridor, finding:

> [A] waiver to permit Amtrak's TSN to operate under the fixed point-to-point provisions of Sections 15.407(a)(1)(iii) and 15.407(a)(3) will not undermine the purpose of the rules. The TSN bears many characteristics of a fixed point-to-point network. Both the access points and train-based radios transmit in a highly directional manner. Because Amtrak's operations will be exclusively within the bounds of the NEC ROW, its mobile operations will essentially be operating at a series of fixed linear points along a defined path. A trackside station will only communicate with a single on-train radio at any given time and only transmit when a train is in position to form the other end of the link . . . .[2]

The directional beam transmissions that Alaska Communications seeks to utilize pursuant to the waiver requested herein are similar to the series of point-to-point transmissions for which OET granted that previous waiver, and Alaska Communications seeks similar relief from Section 15.407(a)(3). Furthermore, granting the requested relief would serve the public interest by facilitating efficient delivery of advanced services in sparsely-populated areas of Alaska, in fulfillment of Commission policy goals.

---

[2] Letter from Julius P. Knapp, Chief, Office of Engineering and Technology, to Robert Primosch, Counsel for Amtrak, DA 17-441, 32 FCC Rcd 4592, 4594 (OET 2017) ("*Amtrak Waiver*").

Background

Affiliates of Alaska Communications serve as incumbent local exchange carriers ("ILECs"), not only in Anchorage, Fairbanks, Juneau, and their surrounding rural areas, but also in approximately 50 Bush communities, which typically range in size from a few dozen to several hundred residents.[3] In this role, Alaska Communications and its affiliates have accepted approximately $19.6 million annually in Connect America Fund ("CAF") Phase II support, in exchange for which the Company committed to make available voice and qualifying broadband capability to at least 31,571 customer locations, in census blocks characterized by high costs of service, and in locations that previously have been unserved by any other broadband provider.[4]

Alaska Communications needs this waiver to meet its CAF Phase II broadband deployment commitment. The state of Alaska has a population of about 740,000 people, only slightly greater than that of the District of Columbia, yet the state encompasses about 1/6 of the total land area of the nation, larger than the District of Columbia and 22 other states combined.[5]

---

[3] Alaska's "Bush" communities are those that are isolated geographically from the infrastructure customarily available throughout most of the nation, including the areas in and around Alaska's three largest population centers, Anchorage, Fairbanks and Juneau. These Bush communities generally are inaccessible by road, and are not connected to the state's power grid. People, as well as goods and services, must arrive by plane, barge, snow machine, all-terrain vehicle, or other off-road transportation means. Communications services in these communities generally rely on satellite or terrestrial point-to-point microwave transport links to Anchorage, Fairbanks, or Juneau.

[4] *See Connect America Fund*, WC Docket No 10-90, Order, FCC 16-143, 31 FCC Rcd 12086 (2016), at ¶ 1.

[5] *See* United States Census Bureau, State Area Measurements and Internal Point Coordinates, *available at:* https://www.census.gov/geo/reference/state-area.html (visited July 27, 2018) (showing the area of Alaska is greater than that of North Carolina, New York, Mississippi, Pennsylvania, Louisiana, Tennessee, Ohio, Virginia, Kentucky, Indiana, Maine, South Carolina, West Virginia, Maryland, Vermont, New Hampshire, Massachusetts, New Jersey, Hawaii, Connecticut, Delaware, Rhode Island, and the District of Columbia combined).

Of these 740,000 people, half live in the state's three population centers of Anchorage, Fairbanks, and Juneau.[6] The other half are clustered in small, rural and remote communities that dot approximately 570,000 square miles. As a result, rural and Bush areas of Alaska, including the high-cost census blocks that qualify for support under the terms of Alaska Communications' CAF Phase II obligations, have by far the lowest population density in the nation.

Alaska Communications intends to satisfy its CAF Phase II broadband service commitment in sparsely-populated areas by deploying a fixed wireless broadband solution that incorporates RADWIN U-NII base station radios, operating primarily in the U-NII-3 band. In order to reach all unserved customers in Chena Hot Springs and Ninilchik from available equipment towers, and thereby maximize the public interest benefits of this CAF Phase II support, Alaska Communications will need to increase the range of these base stations by using antennas with higher gain than the 6 dBi that Section 15.407(a)(3) otherwise allows. Alaska Communications requests this waiver in order to do so.

Discussion

The Commission may waive its rules for "good cause shown."[7] More specifically, the Commission may exercise its discretion to waive a rule where the particular facts make strict compliance inconsistent with the public interest.[8] In making this analysis, the Commission may

---

[6] *See* United States Census Bureau, Quick Facts: Anchorage Municipality, Fairbanks, Juneau, and State of Alaska, *available at:* https://www.census.gov/quickfacts/fact/table/juneaucityandboroughalaska,fairbankscityalaska,anchoragemunicipalityalaska,ak/PST045217 (visited July 27, 2018).

[7] 47 C.F.R. § 1.3.

[8] *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153, 1157, (D.C. Cir. 1969), *affirmed by WAIT Radio v. FCC*, 459 F.2d 1203 (D.C. Cir. 1972).

take into account consideration of hardship, equity, or more effective implementation of overall policy on an individual basis.[9] This request meets that standard.

A. Special Circumstances Justify This Waiver

In Alaska, uniquely low population density combined with unique broadband service deployment challenges combine to create a set of special circumstances justifying a grant of this waiver request.

First, in rural and Bush Alaska, typically there are few existing towers available for the deployment of wireless infrastructure. Constructing and operating new towers is cost-prohibitive in these areas, given the low number of potential customers in high-cost census blocks covered by the Alaska Communications CAF Phase II service commitment. In many cases, the only economically viable option for delivering broadband service, even with CAF high-cost support to offset some of the cost, is to use existing towers.

Unfortunately, in some cases, such as in the vicinity of Chena Hot Springs and Ninilchik, the available towers are not located at the geographically optimal points from which to cover the target communities. For example, Alaska Communications' CAF Phase II service in the areas around Chena Hot Springs, will employ two towers located in Two Rivers and Pleasant Valley, respectively, both at least 30 miles west of the center of the Chena Hot Springs community. There are about 407 customer locations within range of one or both of these towers. Without the requested waiver, Alaska Communications would be able to offer broadband service only to about 334 of these customers, or about 82 percent coverage. The waiver would offer two benefits. One, it would increase the total number of customer locations that Alaska

[9] *WAIT Radio*, 418 F.2d at 1159; *Northeast Cellular*, 897 F.2d at 1166.

Communications could serve from these towers to 391, or over 96 percent of the market. And two, it would reduce deployment costs and improve service quality and broadband speeds because the stronger signal will allow the use of shorter equipment masts and lower gain antennae at the customer premises.[10]

Ninilchik would see similar benefits. Alaska Communications has analyzed a sample of 965 of the 3,552 customer locations that are within range of its towers in that area. Without this waiver, it found that 860 customer locations, or about 89 percent of those sampled, could receive service. With the waiver, that number increases to 936, or about 97 percent of the sample. In addition to this increase in the number of customers that can receive service, there was a sharp improvement in the deployment parameters: the number of customers that could receive service using the shortest (15-foot) equipment mast jumped from 379 to 609, while the number that would require a high-gain, "turbo" antenna at the customer premises fell from 475 to 316, indicating lower deployment costs and the potential for faster and more reliable broadband service.[11]

Constructing additional towers to enable similar outcomes would be cost-prohibitive, both because of the direct construction costs of the tower itself in such remote locations, and because of the high cost of purchasing or deploying additional electric and telecommunications backhaul services to locations where neither may be available or affordable today. Thus, the requested waiver is the only way to facilitate more comprehensive availability of CAF II-qualifying service in Chena Hot Springs and Ninilchik, Alaska.

---

[10] Maps showing the anticipated improvement in coverage of locations near Chena Hot Springs are attached as **Appendix A,** hereto.

[11] Maps showing the anticipated improvement in coverage of locations near Ninilchik are attached as **Appendix B,** hereto.

Second, in rural and remote areas of Alaska, the uniquely low population density offers few potential customers within the coverage radius of a single base station across which to recover the capital and operating costs of broadband Internet access service. In many areas, capacity constraints of the base stations themselves would militate in favor of denser deployment and lower operating EIRP levels, in order to achieve greater frequency re-use, higher service speeds, and increased system capacity. Using the U-NII-3 band, for example, one RADWIN base station has capacity to deliver up to 750 Mbps, and can address a maximum of 64 customer locations. In Chena Hot Springs and Ninilchik, customer density is extremely low, meaning that, even with the requested waiver, Alaska Communications does not anticipate that these capacity limits will constrain service from any base station or necessitate denser deployment. Rather, it is vital that each base station be able to deliver a strong signal to the largest geographic territory possible, in order to reach the maximum number of potential customers and increase the efficiency of the service by reducing per-customer costs.

Third, a waiver would allow Alaska Communications to overcome severe signal attenuation that results from ground clutter in Alaska, rather than extending coverage potential far beyond the range that it could otherwise achieve over clear terrain under the existing Section 14.504(a)(3) limits on point-to-multipoint operations. In these areas of Alaska, there are dense conifer forests that lie between the tower and the target communities, producing severe attenuation of the 5 GHz signal compared to what could be achieved in clear terrain.[12] The

[12] *See, e.g.,* Bruce Alan Fette *et al.*, *RF & Wireless Technologies* (Newnes 2008), at 208-09 ("Conifers are marked by the presence of needles, on the order of 3-15 cm long and a few millimeters in diameter. At 2 or 5 GHz, the needles mainly affect propagation when they happen to be aligned with the polarization of the incoming radiation. If the foliage is dense, unobstructed paths through the trees [that are] large compared with the wavelength are unlikely.").

requested waiver would enable Alaska Communications primarily to overcome this attenuation and achieve signal coverage more comparable to what would otherwise be available over clear terrain under the existing point-to-multipoint rule.

B. A Waiver of Section 15.407(a)(3) Would Serve the Public Interest

A waiver of Section 15.407(a)(3) of the Commission's rules, 47 C.F.R. § 15.407(a)(3), as requested herein, to allow devices that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals into individual receivers or groups of receivers to operate under the emission rules applicable to fixed, point-to-point operations, would generate substantial public interest benefits. It would advance the Commission's broadband deployment goals by allowing more rapid and efficient deployment, including by recipients of CAF Phase II support, and would cause no material increase in harmful interference to other users of the band.

1. Grant of This Petition Would Advance the Goals of the Connect America Fund

The Commission's 2011 *Transformation Order* broadened the focus of the Commission's high-cost universal service support mechanisms as a tool to foster expanded availability of affordable broadband Internet access services, in addition to traditional voice telephony.[13] To that end, it created the Connect America Fund, as a foundation for, among other things, "incentive-based policies that encourage technologies and services that maximize the value of scarce program resources and the benefits to all consumers."[14]

CAF is supported, like all of the Commission's universal service support mechanisms, through revenue-based universal service contributions paid directly by providers of interstate and

---

[13] *Connect America Fund*, WC Docket No. 10-90, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, 26 FCC Rcd 17663 (2011) ("*Transformation Order*"), at ¶ 14.

[14] *Id.* at ¶ 11.

international, end-user, telecommunications services, and indirectly by consumers of those services through surcharges levied on monthly retail bills. As a result, it is a hallmark of good stewardship of those mechanisms that the limited funds available be used efficiently and in ways that produce the greatest public interest benefits possible.[15]

By granting this waiver, the Commission would increase the number of customer locations that Alaska Communications can reach with each base station, and reduce deployment costs. A waiver therefore will allow Alaska Communications to use its CAF Phase II support more efficiently by reducing the overall capital and operating costs of broadband service in these marginal high-cost areas. Because Alaska Communications will receive CAF Phase II support for a fixed term of only ten years, this increased efficiency is important for at least two reasons. Today, the waiver will allow the Commission to stretch its CAF Phase II investment dollars, increasing opportunities for Alaska Communications to meet the minimum number of customer locations it must serve under CAF Phase II. And, tomorrow, when the term of CAF Phase II and its associated annual support payments expire, it will reduce the overall capital and operating costs that Alaska Communications (or a successor service provider making use of the Company's infrastructure) must bear to continue to maintain and improve its broadband service offerings in these areas.

2. Grant of The Instant Petition Would Not Adversely Affect Any Other User of the U-NII-3 Band

RADWIN, Ltd., the manufacturer of the base station radios that Alaska Communications currently intends to deploy, has recently filed a petition for rulemaking requesting that the

[15] *Transformation Order* at ¶ 187 (observing that, in funding broadband deployment under CAF, the Commission must "ensure that the public interest obligations are achieved as cost-effectively as possible").

Commission amend Section 15.407(a)(3) to grant similar relief nationwide to what Alaska Communications seeks here.[16] As RADWIN explains in that petition, operating the base stations on this basis "would enhance the service experience of remote users, as the signals would travel a longer distance, provide higher throughput, and deliver a more reliable service." The instant petition, which is narrowly limited to the communities identified herein, may be granted without prejudice to the RADWIN petition or any Commission consideration of future modifications to Section 15.407(a)(3).

In support of its Petition, RADWIN prepared a "Technical Statement in Support of Petition for Rulemaking," demonstrating that U-NII-3 devices that utilize such beamforming technology can operate with high-gain antennas and "will not pose any additional risk of interference, as the transmission at any instance resembles that of a point-to-point system."[17] Rather, RADWIN explained that, "the use of multiple directional beam technologies at the requested higher EIRP would not introduce a higher level of interference to other U-NII-1 and U-NII-3 devices in proximity, but rather, would lower the level of interference compared to a system using a legacy wide-beam sectorial antenna."[18]

In 1997, the Commission, with NTIA's support, left open the possibility that it would authorize the use of high gain transmit antennas with U-NII devices at 1-watt transmitter power following further experimentation to ensure that such operations "would not cause interference to

---

16 *See* Public Notice, "Consumer & Governmental Affairs Bureau Reference Information Center Petition for Rulemakings Filed," Report No. 3097 (rel. June 29, 2018); *RADWIN Ltd. Amendment of Part 15 of the Commission's Rules to Advance Improved Broadband Services in the U-NII-1 and U-NII-3 Bands*, Petition for Rulemaking, RM No. 11812 (filed June 18, 2018) ("RADWIN Petition").

17 RADWIN Petition, Appendix B, at 1.

18 *Id.*

the primary service, Government radiolocation."[19] As RADWIN has demonstrated, advances in technology since 1997 have addressed this concern. Specifically, based on detailed engineering study, RADWIN concluded that its beamforming radios outperformed those in service when the Commission first adopted the point-to-multipoint limits. In fact, the RADWIN beamforming point-to-multipoint radios that Alaska Communications will deploy generate less interference to other receivers than basic point-to-point radios that are already authorized to operate with high-gain antennae. *First*, inside the main lobe of the transmission beam:[20]

> "1. The point-to-multipoint base station using a multiple directional beam antenna generates less interference to other receivers located inside the main beam as compared to the point-to-point base station operating with a directional antenna, even when operating under the higher EIRP proposed in the Petition for Rulemaking. This is due to the steering feature of the radio.
>
> "2. The point-to-multipoint base station operating with a multiple directional beam antenna, even when allowed to operate at the EIRP level proposed in the Petition for Rulemaking (i.e., the EIRP limit for point-to-point operations) generates a similar level of interference to the much lower EIRP point-to-multipoint operations presently allowed (using a wide-beam sectorial antenna)."

Second, outside the main lobe of the transmission beam:[21]

> "1. Being non-directional, and despite the EIRP limitations, the legacy point-to-multipoint base station with the sectorial 90 degrees antenna generates the highest levels of

---

[19] *Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range*, ET Docket No. 96-102, Report and Order, FCC 97-5, 12 FCC Rcd 1576 (1997), at ¶ 46. In 2014, the Commission again declined to extend the point-to-point rules to point-to-multipoint operations, not because of any specific interference concern, but merely because such a rule change was outside the scope of the proceeding underway at that time. As the Commission explained, "to increase the eligibility for higher antenna gain to point-to-multipoint systems would be an expansion of usage in the U-NII-3 band, and therefore is beyond our proposal to consolidate the Section 15.247 and the Section 15.407 rules in the U-NII-3 band." *Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 13-49, First Report and Order, FCC 14-30, 29 FCC Rcd 4127 (2014), at ¶ 113.

[20] RADWIN Petition, Appendix B, at 9.

[21] *Id.* at 7.

> interference and always creates more interference than the same point-to-multipoint base station operating with a multiple directional beam antenna, even when the latter operates at the higher EIRP requested in the Petition for Rulemaking (i.e., the EIRP allowed for point-to-point operations).
>
> "2. The point-to-multipoint base station with multiple directional beam technology does not generate higher interference levels than a point-to-point base station operating with a directional antenna, even if the former is allowed to operate at the higher EIRP level requested in the Petition for Rulemaking (i.e., the EIRP allowed for point-to-point operations).
>
> "3. The point-to-multipoint base station when using a multiple directional beam antenna generates the least amount of interference to nearby receivers even when operated at the EIRP level requested in the Petition for Rulemaking (i.e., the EIRP allowed for point-to-point operations) when compared to point-to-point base stations using directional antennas or point-to-multipoint base stations using wide-beam sectorial antennas."

Thus, there should be no heightened interference concerns associated with granting the waiver requested herein.[22]

This is particularly so in the case of the U-NII-3 band in rural and Bush areas of Alaska, where there are few users or potential users of the band with whom Alaska Communications might interfere, and the areas eligible for CAF Phase II support are, by definition, unserved by any other provider of broadband Internet access service, wireline or wireless. Unlike the U-NII-1 band, which includes spectrum that Globalstar, Inc. is authorized to use for feeder links supporting its mobile satellite service ("MSS"), there is no similar feeder link allocation of the U-NII-3 spectrum band. And, Alaska Communications is not aware of any federal radar or other users that are operating in the U-NII-3 band in the vicinity of Chena Hot Springs or Ninilchik, Alaska, to which the requested waiver would be limited.

---

[22] *See also Amtrak Waiver* at 4594.

Conclusion

For the foregoing reasons, Alaska Communications urges the Commission to grant a partial waiver of Section 15.407(a)(3) of its rules, 47 C.F.R. § 15.407(a)(3), to the extent requested herein.

Respectfully submitted,

Digitally signed by Richard R. Cameron
Date: 2018.09.06 16:34:44 -04'00'

Richard R. Cameron
CAMERON LAW & POLICY LLC
2550 M Street, N.W., Suite 343
Washington, D.C. 20037
(202) 230-4962
Richard@CameronLawPolicy.com

Karen Brinkmann
KAREN BRINKMANN PLLC
1800 M Street, N.W., Suite 800-N
Washington, D.C. 20036
(202) 365-0325
KB@KarenBrinkmann.com

Counsel for Alaska Communications Internet, LLC

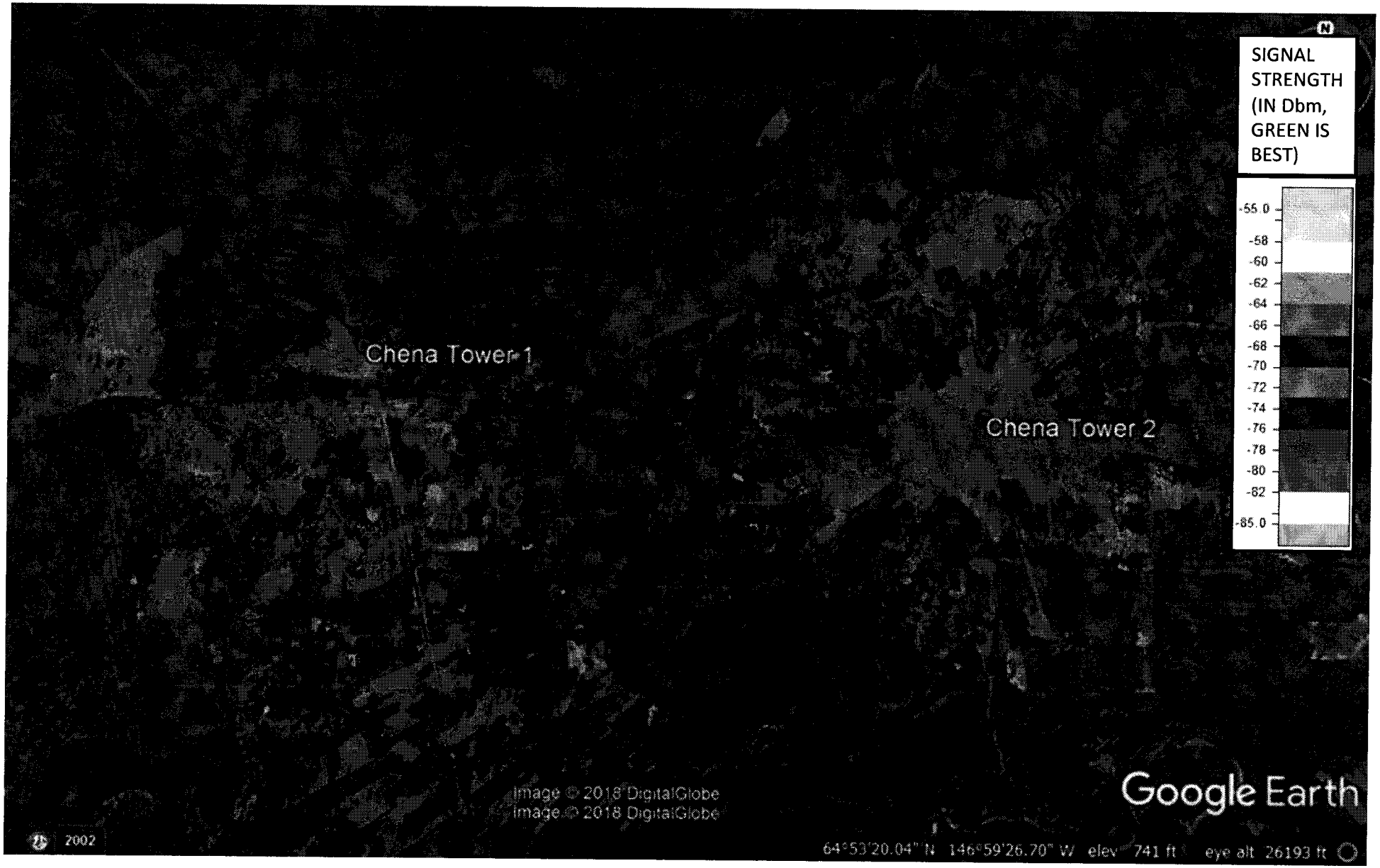
Leonard A. Steinberg
Senior Vice President & General Counsel
ALASKA COMMUNICATIONS SYSTEMS GROUP, INC.
600 Telephone Avenue
Anchorage, Alaska 99503

September 6, 2018

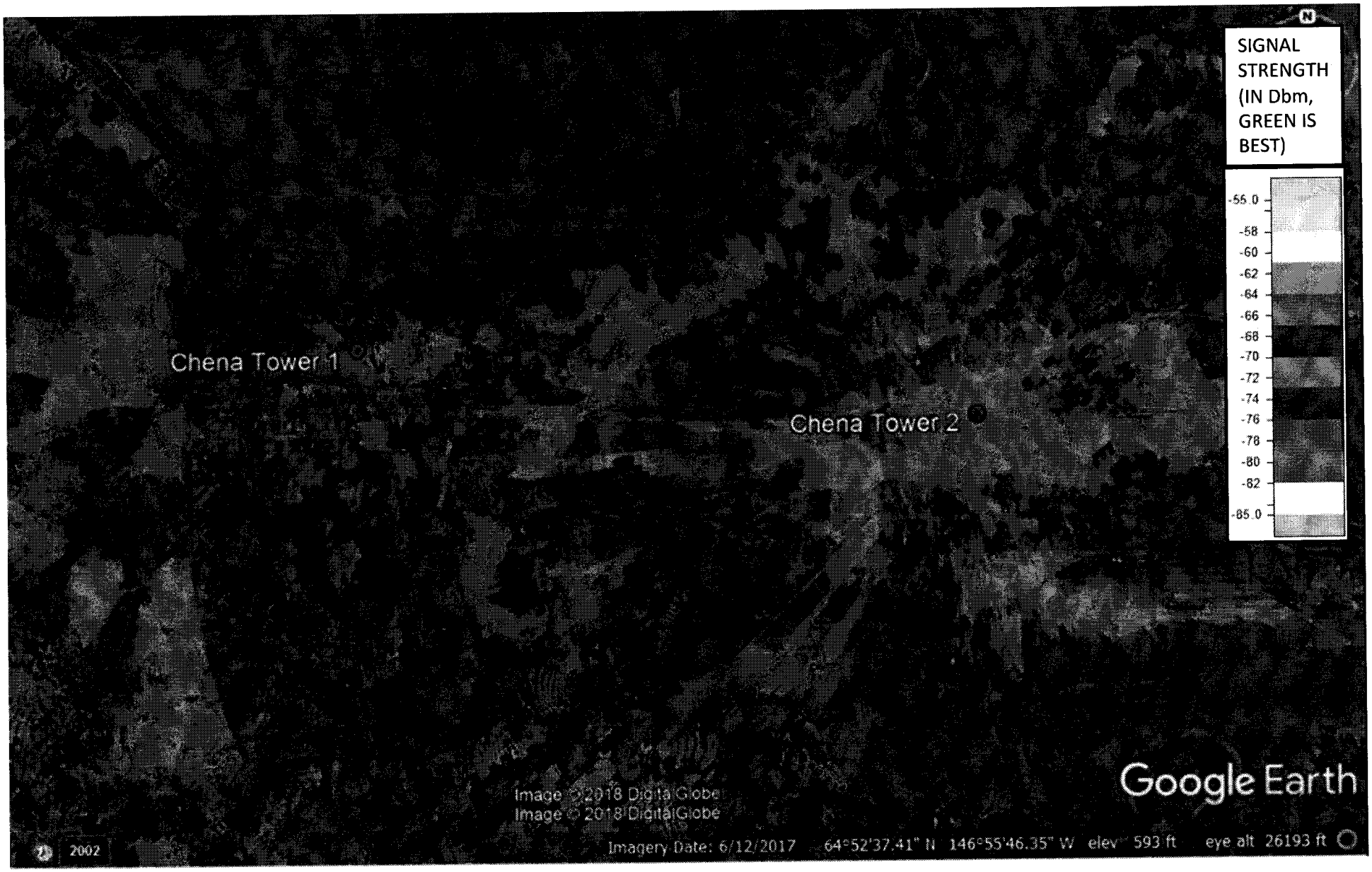
Appendix A

Coverage maps for Chena Hot Springs

CHENA AREA FIXED WIRELESS COVERAGE AT LOW POWER



CHENA AREA FIXED WIRELESS COVERAGE AT HIGH POWER

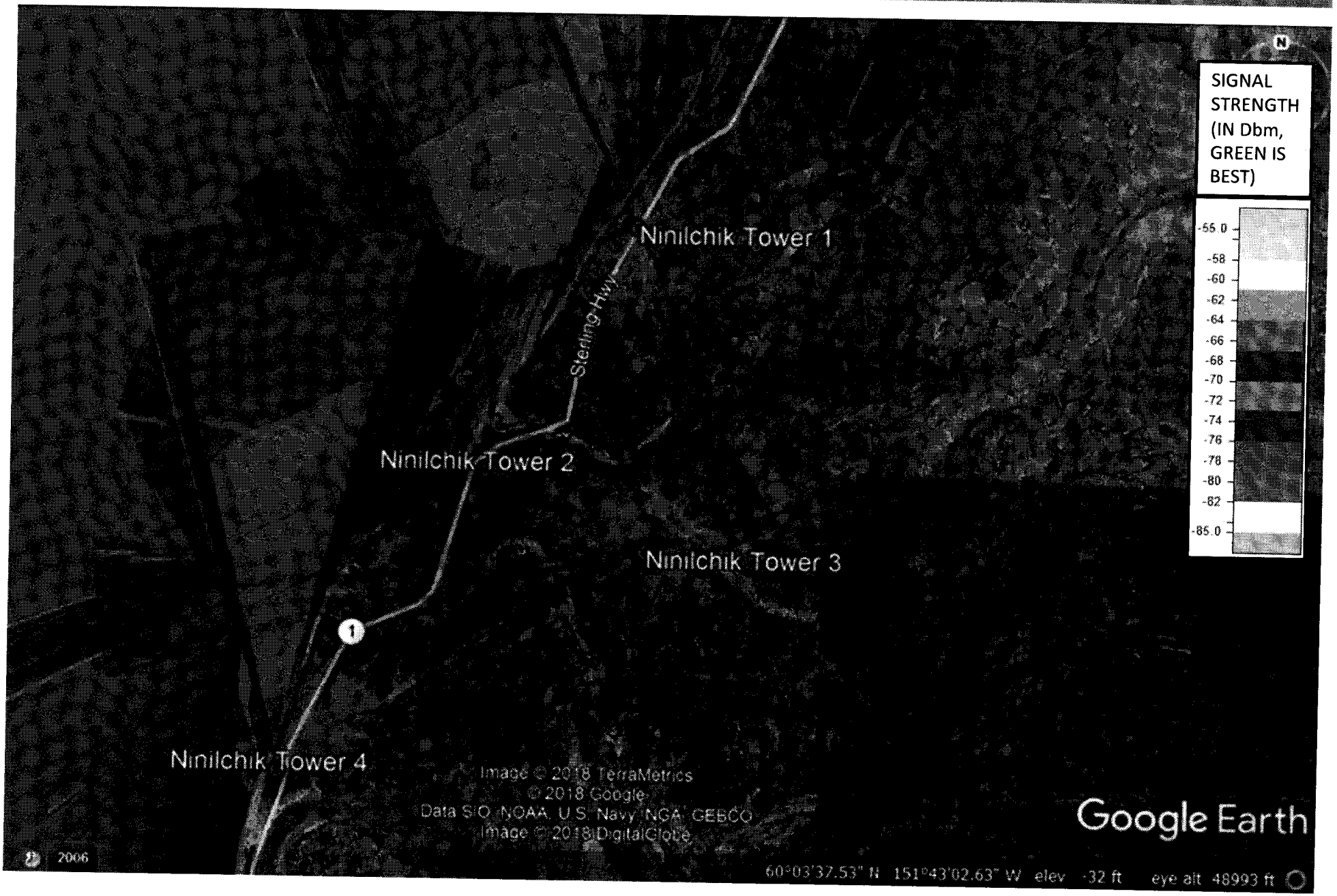


Appendix B

Coverage maps for Ninilchik

NINILCHIK AREA FIXED WIRELESS COVERAGE AT LOW POWER

NINILCHIK AREA FIXED WIRELESS COVERAGE AT HIGH POWER



For assistance with using ECFS, please contact the ECFS Help Desk at 202-418-0193 (tel:+12024180193) or via email at ECFSHelp@fcc.gov (mailto:ECFSHelp@fcc.gov).

Submit a Filing

1 Filing 2 Review 3 Confirmation

Proceeding:	13-49
Confirmation #:	20180906151740974
Submitted:	Sep 6, 2018 5:01:24 PM
Status:	RECEIVED
Name(s) of Filer(s)	Alaska Communications Internet
Law Firm(s)	Cameron Law & Policy
Attorney/Author Name(s)	Richard R. Cameron
Primary Contact Email	richard@cameronlawpolicy.com
Type of Filing	PETITION FOR WAIVER
File Number	
Report Number	
Bureau ID Number	
Address of	Filer
Address	600 Telephone Avenue , Anchorage, AK, 99503
Email Confirmation	Yes

Submit Another ↻ (/ecfs/filings)

For assistance with using ECFS, please contact the ECFS Help Desk at 202-418-0193 (tel:+12024180193) or via email at ECFSHelp@fcc.gov (mailto:ECFSHelp@fcc.gov).

Federal Communications Commission
445 12th Street SW, Washington, DC 20554
Phone: 1-888-225-5322
TTY: 1-888-835-5322
Videophone: 1-844-432-2275
Fax: 1-866-418-0232

Contact Us (https://www.fcc.gov/contact-us)